

Amendments to the Specification:

Please replace paragraph starting at page 3, line 30 with the following rewritten paragraph:

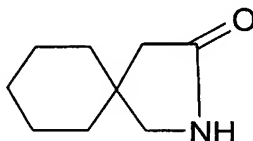
Very recently a process for the preparation of gabapentin has been disclosed in the Indian Patent ~~182685~~ 186285, In the Example 1 given in the said patent for the preparation of crude 1(amino methyl) cyclohexane acetic acid hydrochloride (commonly known as gabapentin hydrochloride), a reference has been made to the preparation of 2-aza spiro(4,5) decane –3 one (commonly known as gabalactam) by using standard Hoffman reaction conditions starting from the amide of the formula 4. When we followed the said procedure for the preparation of 2-aza spiro(4,5) decane –3 one (commonly known as gabalactam), the process gave very unsatisfactory results as explained below .

Please replace paragraph starting at page 5, line 14 with the following rewritten paragraph:

The results of the above experiments very clearly indicate that under the conditions described in the Indian Patent ~~182685~~ 186285 the yield and the purity of 2-aza spiro(4,5) decane –3 one (commonly known as gabalactam) obtained is no better than the initial experiments described by Sarcar in 1928. Further the Example is silent on the yield and purity of 2-aza spiro(4,5) decane –3 one .Therefore the said Indian Patent does not fulfill the need for a process for synthesizing the important & crucial intermediate Gabalactam in higher yields (more than 70 %) and of high purity (more than 95%), which are essential conditions for its production commercially so that the process can be used directly for the preparation of Gabapentin.

Please replace paragraph starting at page 6, line 9 with the following rewritten paragraph:

Accordingly, the present invention provides an improved process for the preparation of gabalactam of the formula 1

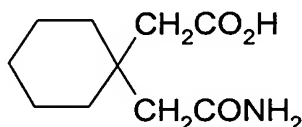


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~~W~~which comprises

(i) ~~P~~preparing an aqueous solution of an alkali or alkaline earth metal hydroxide in a concentration ranging from 10 to 20% by weight, adding bromine to the resulting solution to give the appropriate alkali or alkaline earth metal hypobromite solution having a concentration ranging from 5 to 10% by weight ,

(ii) adding 1 part by weight of an amide of the formula 4



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to 7.5 to 9.5 parts by weight, of the solution of the alkali/alkaline earth metal hypobromite obtained in step (i) during a period in the range of 1 – 4 hours, at a temperature in the range of –10 to + 10 degrees C ,

(iii) ~~K~~keeping the resultant mixture for ageing in the temperature in the range of –10 to +10 degrees C for a period in the range of 0.5 to 2 hours,

(iv) ~~H~~heating the mixture gradually to a temperature in the range of 80 to 100 degrees C , for a period in the range of 3 to 8 hours and aging for 5 to 8 hours,

(v) ~~C~~cooling the reaction mixture to a temperature in the range of 30 to 50 degrees C,

- (vi) ~~E~~extracting the mixture using a nonpolar solvent or a mixture thereof,
- (vii) ~~S~~subjecting the resulting ~~organic layer washed~~ aqueous layer to the steps of ~~(iii)~~ (iv) to (v) defined above,
- (viii) ~~C~~ombining the organic layers obtained in steps ~~((v) & (vi))~~ (vi) & (vii) together,
- (ix) ~~W~~washing resulting combined organic layers with water at a temperature in the range of 30-35 degrees C, and
- (x) ~~D~~istilling of the organic solvent at a temperature in the range of 60-110 degrees C, under reduced pressure.

Please replace paragraph starting at page 7, line 21 with the following rewritten paragraph:

In the step (i), preferably an alkali metal hydroxide, more preferably sodium hydroxide may be used. The concentration of the solution may preferably range from 10 to 15% more preferably 12.5%. The concentration of the hypobromite may preferably be in the range of 5 to 8 % and more preferably 7% by weight.

Please replace paragraph starting at page 7, line 26 with the following rewritten paragraph:

In the step (ii) the amount of hypobromite added may preferably be 8 to 9 parts, more preferably 8.5 to 9 parts of the solution of sodium hypobromite. The addition may be effected preferably during a period ranging from 1 – 3 hours, more preferably 1-2 hours. The temperature during the addition may be maintained at preferably –5 to +5 degrees C, more preferably –5 to 0 degrees C, and aging the reaction mixture in the temperature in the range of –5 to –0 0 degree C, preferably for a period in the range of 0.5 to 1.5 ~~hrs~~ hours and more preferably for 1 ~~hr~~ hour.

Please replace paragraph starting at page 8, line 4 with the following rewritten paragraph:

In step (iii) the heating is ~~effected~~ performed preferably at 80 to 90 degrees C, more preferably 80 to 85 degrees C. The heating is ~~effected~~ performed preferably during a period of 4 to 6 hours, more preferably for 4 hours.

Please replace paragraph starting at page 8, line 8 with the following rewritten paragraph:

In step (iv) the cooling is ~~effected~~ performed to a temperature preferably in the range of 35 to 45 degrees C, more preferably 40 degrees C.

Please replace paragraph starting at page 8, line 11 with the following rewritten paragraph:

In step (v) the extraction is done using preferably an aliphatic or aromatic ~~hydrocarbon~~ nonpolar solvent such as ethylene dichloride, methylene dichloride, hexane and toluene and more preferably an aromatic nonpolar solvent like toluene.

Please replace paragraph starting at page 8, line 15 with the following rewritten paragraph:

In step (vi) the ~~organic solvent extracted~~ aqueous layer is once again heated to a temperature in the range of 80-100 deg C during a period of 3-8 hrs, aged for 5-8 hrs cooled and re-extracted with toluene.

Please replace paragraph starting at page 8, line 22 with the following rewritten paragraph:

In step (vii) the distilling of the organic solvent is done preferably between 60-90 deg C and more preferably between 60-65 deg C under reduced pressure.

Please replace paragraph starting at page 9, line 25 with the following rewritten paragraph:

Bromine (0.824 kg, 5.15 mole) is added to a solution of sodium hydroxide (1 kg) in water (7 l) at -5 to 0 degrees C over 45 - 90 min and the solution stirred for an additional 30 min at the same temperature. Cyclohexane-1, 1-diacetic acid monoamide of the ~~formula-3~~ formula 4 (1 kg, 5.02 mole) is added to the above solution in portions over a period of 3 hrs at -5 to 0 degrees and the mixture stirred at the same temperature for 1 hr. The reaction mass is heated to 80 -85 degrees C slowly over a period of 4 hrs and stirred for another 6 hrs at the same temperature. It is then extracted with toluene after cooling the reaction mixture to 40 degree C twice. The aqueous layer is again heated at 80 - 85 degrees C , aged for 6 hrs at the same temperature, cooled to 40~~deg~~ degrees C and extracted with toluene twice. The toluene layers are combined, treated with charcoal and filtered. The filtrate is washed with water twice and evaporated at a temperature of 60-65 ~~deg~~ degrees C under vacuum to give white crystals of gabalactam of the formula 1 (0.62 kg, 80.7%), m.p. 88-90 degree C ; purity (area % by HPLC greater than 99).

Please replace paragraph starting at page 10, line 15 with the following rewritten paragraph:

Bromine 42g (0.257 mole) is added to a solution of potassium hydroxide (80g/80% purity) in water (350ml) at -5 to 0 degrees C over 60 min and the solution stirred for an additional 30 min at the same temperature. Cyclohexane-1,1-diacetic acid monoamide of the ~~formula-3~~ formula 4 50g (0.251 mol) is added to the above solution in portions over a period of 2 hrs at -10 to 0 degrees C and the mixture stirred at the same temperature for 2 hrs. The reaction mass is heated to 90-98 degrees C slowly over a period of 4 hr and stirred for another 5 hrs at the same temperature. It is then extracted with

ethylene dichloride twice, after cooling the reaction mixture to 30 degrees C . The aqueous layer is again heated at 90-98 degrees C and extracted with ethylene dichloride after cooling the reaction mixture to 30 degrees C , twice. The ethylene dichloride layers are combined, treated with charcoal and filtered. The filtrate is washed with water and evaporated under reduced pressure to give brownish white crystals of gabalactam of the formula 1 (28g, 72.8%) m.p. 88-90 degree C; purity (area % by HPLC 98).

Please replace paragraph starting at page 11, line 3 with the following rewritten paragraph:

Bromine 45g (0.257 mole) is added to a solution of sodium hydroxide (45g) in water (350ml) at -10 to 0 degrees C over 45 – 90 min and the solution stirred for an additional 30 min at the same temperature. Cyclohexane-1,1-diacetic acid monoamide of the ~~formula-3~~ formula 4 (50g, 0.251 mole) is added to the above solution in portions over a period of 1 hr at -5 to 0 degrees C and the mixture stirred at the same temperature for 1 hr. The reaction mass is heated to 80 –90 degrees slowly over a period of 6 hrs and stirred for another 8 hrs at the same temperature. It is then extracted with methylene dichloride twice, after cooling the reaction mixture to 30 degrees C . The aqueous layer is again heated at 80-90 degrees and extracted with methylene dichloride after cooling the reaction mixture to 30 degrees, twice. The methylene dichloride layers are combined, treated with charcoal and filtered. The filtrate is washed with water and evaporated under reduced pressure to give white crystals of gabalactam of the formula 1 (28g 72.8%) m.p. 88-90 degree C; purity (area % by HPLC 99).

Please replace paragraph starting at page 11, line 22 with the following rewritten paragraph:

Bromine 50g (0.285 mole) is added to a solution of sodium hydroxide (55g) in water (300ml) at -10 to 0 degrees C over 45 – 90 min and the solution stirred

for an additional 30 min at the same temperature. Cyclohexane-1,1-diacetic acid monoamide of the ~~formula 3~~ formula 4 (50g, 0.251 mole) is added to the above solution in portions over a period of 1.5 hrs at -10 to 0 degrees C and the mixture stirred at the same temperature for 1 hr. The reaction mass is heated to 85-95 degrees slowly over a period of 5 hrs and stirred for another 7 hrs at the same temperature. It is then extracted with toluene twice, after cooling the reaction mixture to 50 degrees C. The aqueous layer is again heated at 85-95 degrees C and extracted with toluene after cooling the reaction mixture to 50 degrees C, twice. The toluene layers are combined, treated with charcoal and filtered. The filtrate is washed with water and evaporated under reduced pressure to give white crystals of gabalactam of the formula 1 (29.5g 76.7%) m.p. 88-90 degree C ; purity (area % by HPLC 98).